

A RECONSTRUCTABLE CROSSWORD PUZZLE

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Shown below is a crossword consisting mostly of obscure words. On average, the words are short. The average number of letters per word is only 3.86. A majority of the words are probably unknown to the reader. However, they are all genuine words and, with one exception, can be found in the Second Edition or Third Edition of Webster's New International Dictionary. The sole exception is the word ENE. This is listed by neither of the two Websterian dictionaries, but it can be found in the Oxford English Dictionary. ENE means 'in lamb'.

The fact that the words are generally obscure and short should indicate to the reader the difficulty involved in the construction of the problem that we are about to present. The crossword shown here measures 15 squares by 15 squares. The 15 x 15 matrix has been divided into twenty-five 3 x 3 squares. What we now want the reader to do is this: shuffle these twenty-five squares so as to create a new 15 x 15 arrangement which is a genuine crossword. All of the words must link up with the remainder of the diagram; that is, no word or group of words must be isolated from all of the other words.

That then is the task which we are placing before the reader. The words in the to-be-constructed crossword are also generally obscure and short (the average number of letters per word is 4.07). Just to make things extra simple, we are giving the definitions of all the words in the crossword that the reader is to construct. All of the words (or their singular forms, or their infinitive forms) can be found in the two Websterian dictionaries already mentioned.

Because of the difficulty involved in constructing these two crosswords, it was found necessary for a few words to occur more than once in the same diagram. For example, the diagram presented to the reader contains the word ON twice. Such a word is called an intra-repeated word. It was also found necessary for some words to appear in the second diagram as well as in the original diagram. Such words we call inter-repeated words. We shall not be giving too much away to the reader by pointing out that the word CO crops up in

the reconstructed diagram as well as the original diagram. There is, of course, no reason why a word cannot be an inter-repeated and an intra-repeated word at the same time.

U	C	F	A M O	N
T H E	O C R	A T I	C C	A N
E	T A	T	E R A	E
R A	I	A S	A	P E N
O C T	O N A	L T	E R N	A T E
T O	P A U	R	E	L
O D		C H I	N	I
N	E S	H E N	S	A T
I N	T A M	I N G	A T	E E S
C A	G O	E	G A	M
A L	E A	L A P	P A G	E S
E	R A	O	L E	R
M O U	T U	S O	M	A
I N T	R A M	A T R	I C A	L L Y
N	Y	P E	O N	U

The across clues for the to-be-constructed crossword:

1. Any of various Chinese units of land measure.
8. From an international point of view.
12. Finished.
15. Mother.
16. Unreal.
18. An agricultural people living in scattered groups throughout Transcaucasia.
20. In the position of being in contact with the upper surface of something.

21. An English dialect word for 'sifts'.
22. Welfare.
23. Currently fashionable.
24. A deity of the supreme triad in the theological system of the Babylonian priests.
25. The female of the domestic fowl.
26. Alcoholic beverages.
29. The descent of water in drops.
30. A low-lying pasture or meadow.
31. A village of the tribe of Simeon.
33. Surname of one of the signers of the Declaration of Independence (given in the Biographical Section of Webster's Second Edition).
35. A circuit around a racecourse.
37. Relating to the Greek philosopher Socrates.
39. Unsorted wheat flour or meal.
42. A people of Ghana.
43. A naked, winged, infantile figure representing the god of love.
46. Storms about.
48. Boil.
50. The Irish and Brythonic god of the sea.
51. The Muse who presided over lyric and amatory poetry.

The down clues for the to-be-constructed crossword:

1. Very small in size.
2. Onward.
3. The musical tone C in the French fixed-do system.
4. A metric unit of area, 100 square meters.
5. Fleishy with superfluous nonmuscular flabby tissue.
6. Mother.
7. An East Indian shrub or small tree, *Morinda citrifolia*.
9. A mineral that is a hydrated amorphous silica.
10. Dextrophenone.
11. An inhabitant of the land of Luyia.
13. Any of numerous glycosides that occur in many plants.
14. Precious metal.
15. A Scottish variant of 'moaning'.
17. A priest.
19. A chiefly Scottish form of the adjective 'one'.
22. A mild oath.
23. The Kentucky coffee tree.
27. A device formerly used for heating liquids.
28. A dialectal variant of 'so'.
32. Elevated railroad.
33. An underground storehouse.
34. Dialectal past tense of the verb 'eat'.
36. An obsolete variant of 'pome', a kind of fruit.

37. A raised platform for the viewing of something by an audience.
38. Rotating pieces of machinery.
39. A cord, usually of goat's hair, that Arabs wind around their heads.
40. To devour or consume.
41. To examine or investigate judicially.
44. Either of two South American wood sorrels.
45. To undergo natural decomposition.
47. The god Tiwaz, in Saxon and Bavarian tradition.
49. An obsolete slang word which is short for 'cove', a fellow.

This is probably the reader's first encounter with a reconstructable crossword. A crossword such as we have presented here is called a two-solution puzzle for obvious reasons. Since constructing this two-solution puzzle, we have progressed to forming puzzles with a higher number of genuine, different solutions. So far, we have managed to construct three-, four- and six-solution puzzles. One or more of these, we hope, will appear in future editions of Word Ways.

In constructing higher-order multi-solution reconstructable crosswords, the number of inter-repeated and intra-repeated words increases quite considerably. In our six-solution puzzle, each puzzle contains about 60 words. Out of this total of 360 words only 180 (50%) are different -- that is, we have a repeat rate of 50%. It is not too difficult to see that the repeat rate will increase as we attempt to build more and more solutions into the overall puzzle.

Up to now we have not tried to construct a seven-solution set of diagrams. We feel that this would prove impossible if we are to keep the repeat rate below 50%, an arbitrary figure. A seven-solution set of puzzles with a repeat rate of 60 to 65% should just about be constructable.

The second solution to this crossword puzzle is given in the Answers and Solutions at the end of this issue. Please let the editor know if you would like more puzzles of this type.